Connecticut DOT
2015 Cost Estimating Guidelines

I. PURPOSE

These guidelines provide basic cost estimating information for Department construction projects and recent cost information for several common construction items. These guidelines do not provide guidance on estimating preconstruction (engineering design) costs. An explanation of construction cost elements follows.

II. GENERAL

The Department's cost estimating process is heavily reliant on "AASHTOWare Project Estimator" (Estimator®) a widely-used software adapted specifically for Department use. The CTDOT AASHTOWare Project Estimator® Procedures Guide provides detailed guidance on using the software for Department projects and should be referenced in conjunction with these guidelines.

Total project cost includes pre-construction and construction phase expenditures. The following is a general framework of project costs:

- PRECONSTRUCTION
  - Project planning,
  - Design (State or consultant),
  - Design management, liaison and review/support (Department units),
  - Permit application preparation,
  - Engineering by utilities and municipalities, and
  - Right of Way appraisal, acquisition and relocations.

- CONSTRUCTION
  - Contract,
  - Non-contract,
    - Construction inspection and contract administration (materials testing, design support),
    - Work and inspection by utilities and municipalities,
    - Work and inspection by railroads, and
    - State Police.
  - Contingency (generally added separately to Contract and Non-contract costs)

In addition to the above, other project-related costs (e.g., adjustment of traffic signals by state forces) are sometimes incurred.

An example estimate covering various phases and cost categories is provided as Attachment 1.

CONTRACT ITEMS are the individual "pay items" performed by the Department's contractor. During the bidding process, bidders submit prices for unit-based (i.e., paid for by cubic yard, each, ton, linear foot, etc.) and lump sum items. Some contracts also include one or more Estimated amount (EST) items. For these items, the Department

designates the contract amount, generally because the required work is not sufficiently defined to solicit binding bids. The established amount is included on the bid proposal form and part of each bidder's bid amount. The actual amount paid for an Estimated amount item is determined during construction based on actual requirements.

Estimator® is the principal tool used to estimate contract unit-based items. Much of the procedural detail associated with using Estimator® is provided in the CTDOT AASHTOWare Project Estimator® Procedures Guide. Estimator® has several limitations, including:

- It does not generate estimated prices for lump sum or Estimated (EST) items.
- It does not generate estimated non-contract costs (e.g., utilities, state police).
- It does not generate estimated prices for unit-based items unless the item was used in at least two previous construction contracts within the selected catalog.
- If the selected bid history catalog has between 2 and 14 occurrences of the same item, the Estimator® price will be the average of those prices. No project-specific factors are accounted for.
- If the selected bid history catalog includes 15 or more occurrences of the same item, the Estimator® price will be a regression on several factors (quantity, location, letting date, work type). However, other factors affecting bidder prices (e.g., schedule constraints, difficult site conditions) are not accounted for.

Because of these limitations, the estimator needs to prepare some prices using other information. Additionally, sometimes the estimator should override the price generated by **Estimator®.**

NON-CONTRACT ITEMS represent Department expenses for work required to complete the project but not included in the contract. Specific elements comprising this category are discussed below.

Incidentals – the cost of Construction Engineering (CENG), which consists of the various activities required to administer the construction contract, including inspection, materials testing, construction phase design support and other functions. It includes state and consultant forces, when applicable. For state-awarded construction contracts, this "Incidental Cost" is estimated using a sliding scale percentage of the contract cost in accordance with a Chief Engineer's memorandum (dated January 10, 2014), provided as Attachment 2. Include the estimated amount in the Estimator® file. For contracts awarded by local public agencies, refer to the Chief Engineer's memorandum dated August 14, 2009 (Attachment 3).

Utility Agreements and Railroad Relocation and Protection – costs incurred by public utilities and railroads required by the project, such as for relocation of public utilities or interference with railroads (by physical alteration or occupation of their property). During project development, written agreements between the

Department and each affected utility and railroad are developed and executed to cover the estimated cost of relocation and protection. Identify all agreements and the associated amount(s) from the Utilities Section of the Division of Design Services and include them in the Estimator® file.

State Police – the cost of dedicated patrol and traffic control for selected projects as determined by the Division of Traffic Engineering. This cost is attributable to the project but is not a contract item or cost. The cost is paid by the Department through an interagency Memorandum of Understanding. The estimated amount is included in the Estimator® file.

Estimator® (software) provides no assistance in estimating the three cost categories noted above. The estimated costs for these items should be developed 'offline' and entered into Estimator®

CONTINGENCY is the estimated cost associated with risk and uncertainty. It is usually estimated as a percentage of anticipated costs. Uncertainty and risk diminish as development progresses toward design completion, so contingency also decreases as design development advances. Contingencies are applicable to both contract and non-contract costs. However, these guidelines only provide specific guidance on establishing contingency values for contract costs. See the next section "Cost Estimates During Project Development" for specific guidance.

COST ESIMATES DURING PROJECT DEVELOPMENT

All construction cost estimates should be updated twice per year, at major design milestones (Preliminary Design, Semi-Final Design, Final Design for Review and Final Design Plans) and when the scope is changed significantly.

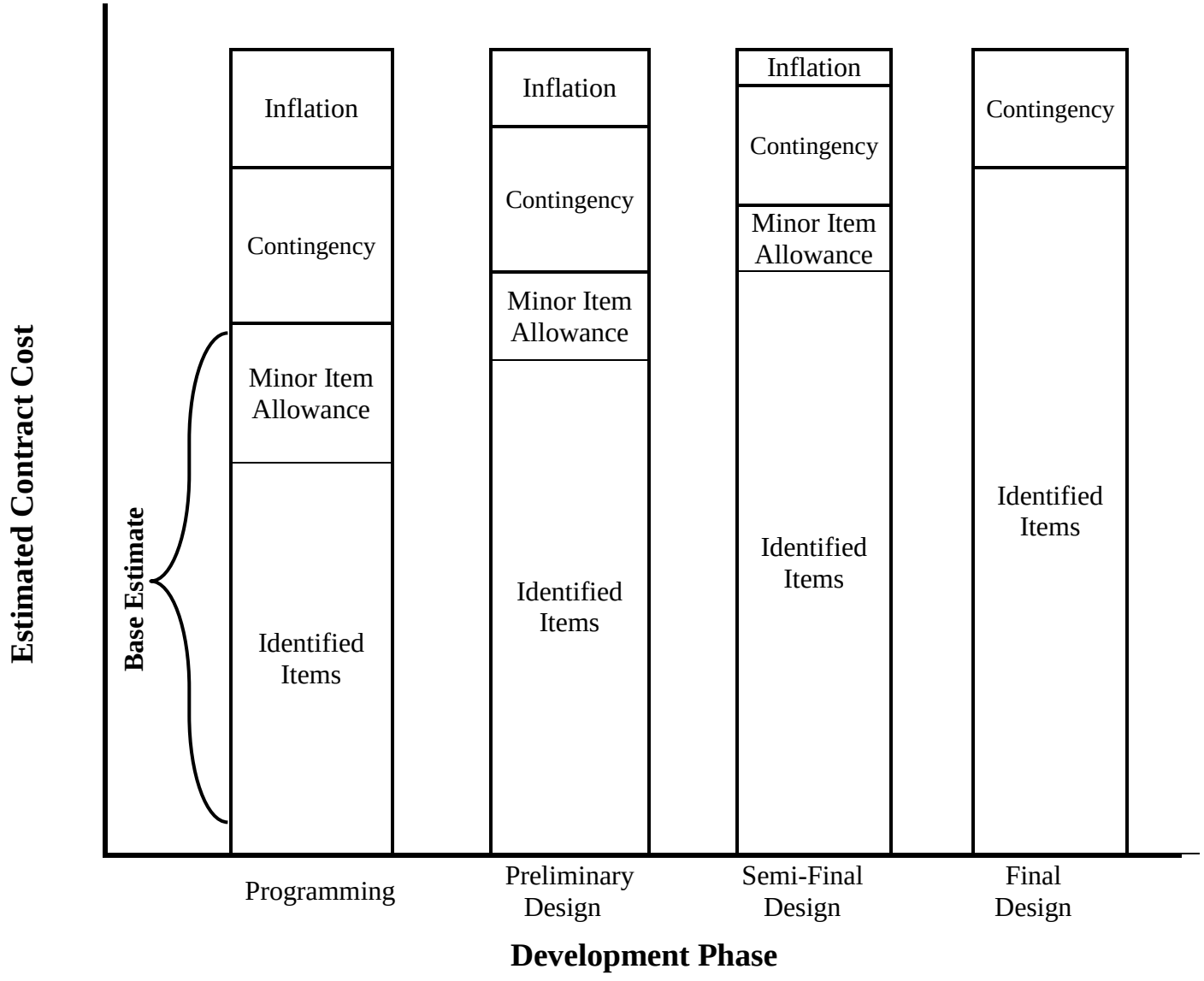
The various elements of the estimated contract cost are shown in the figure below. The **base estimate** is composed of what can be reasonably 'known' about the cost of construction when the estimate is prepared. This base estimate includes the cost of individual work items at the current/recent prices that have been identified. Additionally, in early phases of development, a **minor item** allowance is used to account for items that are known to be required but are too small to account for individually. This allowance is part of the base estimate. As previously noted, **contingency** is the cost associated with risk and uncertainty. An amount is computed and included in the estimate to cover the probable cost of work that cannot be reasonably known – but will probably be needed.

Construction cost estimates are intended to represent Department disbursements (amounts paid out) to construct a project. As labor and material costs change over time, the cost of construction also changes. All estimates should identify a corresponding reference time (month and year). For fiscal management and capital planning purposes, anticipated disbursements (dollars paid out) should be shown in the "year of expenditure". **Inflation** refers to the general trend of increasing cost with time. An

adjustment is generally needed to account for inflation between the cost computed using current/recent prices and future (i.e., year of expenditure) disbursements.

The various elements of a construction contract cost estimate in relation to major project development milestones are shown in Figure 1. The minor item allowance, contingency and inflation adjustment decrease as project definition is completed, all payment items are identified and costs reflect current prices. Further guidance on estimating individual elements of the construction contract cost follows.

Figure 1. Components of construction contract cost by development phase.



The **base estimate** is the estimated cost of anticipated contract work, as contemplated at the time of the estimate and in the current price environment. The estimator may use individual "catalog pay items" found in the Department's bid history (available through Estimator®), aggregate cost factors (e.g., cost/unit of area) or other methods (e.g., cost basis). Aggregate cost factors are discussed in a subsequent section. Additionally, a **minor item allowance** should be included using the factors indicated in Table 1. The estimator needs to make a judgment in selecting a value from within the noted range. The selected percent value is multiplied by the cost of identified items as noted in the table. No minor item allowance is included in the final estimate, since all work should be covered by individual catalog items and quantities.

Table 1. Minor item and contingency factor guidance.

Phase	Minor Item Allowance		Contingency	
	Factor (%)	Multiply by	Factor (%)	Multiply by
Programming	15 - 30	Roadway & Structure items	20 - 30	Base
Preliminary Design	10 - 20	Roadway, Structure, Environmental Compliance & Traffic items	15 - 25	Base
Semi-Final Design	5 - 10	All identified items	10 - 20	Base
Final Design	0	Not applicable	10	Base

The **contingency** element of contract cost is computed by applying the selected contingency percentage to the base estimate. Table 1 indicates a range of recommended contingency factors. The ranges shown are associated with project complexity. The lower end of the range is appropriate for low-complexity projects and vice versa. Typical risk factors include uncertain scope, subsurface work and mitigation measures. At final design, a contingency factor of 10 percent is used in accordance with a Chief Engineer's memorandum (January 10, 2014), and included in the Estimator® file.

Estimates are usually based on recent bid prices. Unless inflation is rampant (more than 10 percent annually), prices based on the most-recent three years are generally adequate for contracts with an imminent letting (i.e., bid opening). However, when the letting is more than a year from when the estimate is prepared, an **inflation** adjustment should be included.

There are basically two methods that can be used to adjust cost based on timing. One is through Estimator®. This software is most useful when all of the contract items and quantities are defined. When this information and the scheduled letting date are available and entered in Estimator®, the estimated costs generated by Estimator® will automatically factor time into estimated cost (i.e., account for inflation). Estimator® computes price trends for individual items and projects costs up to the specified "base date". This adjustment is made automatically only for the unit-based items estimated by Estimator®. This approach is generally ***not*** workable for preliminary estimates.

The second method, and the one recommended for preliminary estimates, is to adjust for **inflation** by direct calculation. Except for contracts with durations of three years or more, the inflation adjustment factor is computed by determining the number of years between the estimate date (when estimate is prepared) and scheduled bid opening and multiplying this number by the annual inflation factor. For contracts with durations of three years or longer, compute the number of years from the estimate date to the mid-point of construction. An annual inflation rate of 5 percent per year (simple, not compound) should be used for 2015 and subsequent years. Example computations follow.

Inflation Example 1 (construction duration less than 3 years)
Estimate date: January 15, 2015
Scheduled bid opening (letting) date: November 16, 2016
Duration of construction contract: 2 years (midpoint: April 2018)
Estimated cost: $1,500,000
Inflation: 5 percent

Estimated future/inflated cost = $1,500,000 x (1.0 + 1.83 x 0.05) = **$1,637,250**

Inflation Example 2 (construction duration more than 3 years)
Estimate date: January 15, 2015
Scheduled bid opening (letting) date: December 14, 2016
Duration of construction contract: 4 years (midpoint: April 2019)
Estimated cost: $15,000,000
Inflation: 5 percent

Estimated future/inflated cost = $15,000,000 x (1.0 + 4.25 x 0.05) = **$18,187,500**

It should also be noted that inflation affects various project cost categories (e.g., rights of way, construction) differently since they are incurred at different points in time and have unique cost trends. The guidance and examples in this section apply only to construction contracts.

IV. AGGREGATE COSTS FOR PRELIMINARY ESTIMATES,

This section provides guidance for the preliminary estimation of several common construction features that are comprised of many individual contract items. The cost of these construction features cannot be obtained directly from bid history or Estimator®.

The advantage of using these aggregate average costs is that they capture many individual contract items without the benefit of a detailed design and the specific items and quantities that will be required. However, it should be recognized that costs vary significantly by project. Some costs are far higher than the average and some are significantly less. These average costs are most appropriate for scoping estimates.

Bridges
Table 2, and associated notes, provide average costs for various categories of bridge work. Most of the information was developed by the Department's Bridge Management unit.

Retaining Walls
The average unit costs are based on lump sum costs for wall divided by the area (length times height, measured from the top of footing to the top of wall).

Average: $105/square foot
Expected range: $80 – $140/square foot

Embankment Walls
Average: $65/square foot
Expected range: $30 – $90/square foot

Roadway Lighting
Expressway: $55/linear foot
Ramps: $40/linear foot
Individual Highway Pole & Light: $9,500

Signalization

Permanent Signal Systems	
State Highway	$150,000 - $180,000/intersection
Locally-owned Signal System	$225,000 - $250,000/intersection
Minor Modification	$30,000/intersection
Major Modification	$80,000/intersection
Temporary Signalization	
M&PT Bridge Projects	$30,000/intersection
Existing Signal	$3,500/intersection
Utility Relocation for Signalization Projects	$7,000/intersection

V. LUMP SUM CONTRACT ITEMS

This section provides guidance for several common construction features that are typically bid as lump sum items.

Structural Steel
The prices of lump sum structural steel items [e.g., Structural Steel, Structural Steel (Site No. _)] includes both material and its installation. Cost is estimated on the basis of weight, using the values (which include material and cost):

Average: $2.50/lb
Above 10,000 lbs and favorable site conditions: $2.25/lb
Below 10,000 lbs or less-than favorable site conditions: $3.00 - $10.00/lb

Table 2. Estimated cost of common bridge work.

Description of Work	Estimating Units	Unit Cost ($)
Total Replacement of Bridge Structure to New Standards: On-system (1)	square feet of replacement bridge (2, 3)	423
Total Replacement of Bridge Structure to New Standards: Off-system (1)	square feet of replacement bridge (2, 3)	400
Removal of Superstructure (over roadway)	square feet of deck removed (3)	50
Removal of Superstructure (over water or rail)	square feet of deck removed (3)	70
Replacement of Bridge Superstructure: Deck Area <1600 square feet	square feet of deck area replaced	360
Replacement of Bridge Superstructure: 1,600 sq ft < Deck Area < 11,000 sq ft	square feet of deck area replaced	300
Replacement of Bridge Superstructure: Deck Area > 11,000 square feet	square feet of deck area replaced	150
Rehabilitation of Existing Superstructure	square feet of deck area rehabilitated	140
Replace Bridge Girder(s)	linear feet of girder replaced	900
Repair or Modify Bridge Substructure	square feet of substructure repair	230
Replace Bridge Deck	square feet of deck area replaced	145
Rehabilitate Bridge Deck	square feet of deck area rehabilitated	125
Replace Bridge Joints	linear feet of joints repaired	226
Repair Bridge Beam Ends	each beam end repaired	5,000
Bridge Touch Up Painting	square feet of area repainted	70
Blast Cleaning and Field Painting of Bridge	square feet of steel area cleaned	30
Replace Bridge Bearings	Each bearing replaced	3,000
Install or Replace Bridge Bit Wearing Surface and Waterproof Membrane	square feet of deck area (2)	8
Repair/Rehabilitate Culvert	square feet of deck area (2)	120
Replace Culvert	square feet of deck area (2)	225

Notes:

1. On-System means the bridge is on a Federal-aid route, which are all roads except those functionally classified as a local road or rural minor collector (use functional classification maps, not state/municipal ownership). Off-system includes everything that is not "On-system". The costs are for the replacement bridge only and do *not* include other work such as demolition of existing structures, constructing approaches, retaining walls, traffic control and other general contract items (e.g., mobilization, construction staking).
2. Compute the area by multiplying the curb-to-curb width times the length.
3. Use the area of the new/replacement (i.e., not the existing) bridge.
4. Compute the area by multiplying out-to-out width times the length.

Recurring Lump Sum Items

The four items addressed in this section are included in many projects. For a specific contract, individual bids for these items often vary widely. Given the variability in bidding strategies along with the requirements for specific projects, average dollar values should not be used for contract estimates. Instead, the cost of these items should be estimated as a percentage of total project cost. Table 3 summarizes recent bid history for single-location highway and bridge construction contracts. These percentages are not necessarily representative of contracts primarily or exclusively for area-wide specialty work (bridge repair, pavement marking, rumble strips, signing, signals), building construction or aviation. When estimating these types of contracts, review previous similar contracts.

Table 3. Range and average percentage for recurring lump sum item costs.

Item		Percent of total bid	
Number	**Description**	**Average**	**Range**
0201001	Clearing and Grubbing	3.0	0.5 – 6.0
0971001	Maintenance and Protection of Traffic	3.5	0.5 – 6.0
0975002	Mobilization and Project Closeout	6.5	3.5 – 10.0
0980001	Construction Staking	1.0	0.2 – 3.0

Accurate estimation of these items is difficult since bidders' prices often reflect factors not directly related to the work entailed by the item. Consequently, average values are often appropriate. However, prices should also consider certain historical trends and practical considerations as discussed below.

The estimated cost of **Clearing and Grubbing** should reflect the extent of the effort. Some project types (e.g., realignment) inherently involve more clearing effort than others (e.g., IMS). Some types of work (bridge rehabilitation) vary widely within the same category. The estimator should select a percentage that is representative of the clearing and grubbing effort, generally within the range shown in Table 3.

Bid prices for **Maintenance and Protection of Traffic** tend to be high (more than 10 percent of total bid) for multi-location bridge repair contracts (e.g., expansion joint, plug joints, beam end). Traffic signal, pavement preservation, intersection improvement and single-location bridge rehabilitation contracts tend to be on the lower end of the range (2 percent or less of the total bid).

Bids for **Mobilization and Project Closeout** (as a percent of total bid) are less volatile than the other recurring lump sum items. Multi-location bridge repair contracts (beam ends, bearings, joints) tend to be higher (10 percent and above). Mobilization for these contracts should be estimated at 10 percent of the total contract and the average value (6.5 percent) is recommended for all other contracts.

Bids for **Construction Staking** tend to be fairly logical**,** generally related to the level of effort. This item is generally 2 percent or more of the total bid for realignment and widening of existing facilities and bridge replacement contracts. For pavement preservation, bridge rehabilitation and traffic signal contracts, this item is generally around 0.5 percent of the contract. For all other contracts, the average (1 percent) is recommended.

VI. OTHER COSTS

Railroad Protection

Flagging:

Metro North and Amtrak: $1,000/man/shift
Other railroads: $800/man/shift

De-energizing: $5,000/Flagman and groundman/shift

On-site Traffic Control Personnel

State Police Officer: $80/hour (not a contract item)
Town (City) Police Officer: $75/hour (contract item, Estimated amount)
Uniformed Flagger: $ 55/hour (contract item, bid unit price)

For preliminary estimating guidance on other construction costs, consult with relevant functional divisions and units (Traffic Engineer, Utilities, Environmental Compliance).

VII. FINAL ESTIMATES

Final Estimates serve as the basis for detailed fiscal actions (e.g., obligating federal and matching funds) and for analyzing contractor bid proposals. Final Design Plan (FDP) estimates should identify contract costs, non-contract costs and a contingency as shown under the "Construction" heading in the "General" section (p. 1).

The Digital Project Development Manual and the CTDOT AASHTOWare Project Estimator® Procedures Guide provide detailed information related to the submission of FDP estimates. This guide also includes guidance on how a "lead" unit (e.g., Highway, Structures) can assemble a project-level estimate by adding together discipline subsets (i.e., roadway, bridge, traffic) and electronic processing options (Estimator® direct entry, uploading Excel files).

VIII. RECENT BID PRICES FOR COMMON CONTRACT ITEMS

Estimator® is the best source of estimated unit prices. If a unit-based item is included in a sufficient number of recent contracts (3 or 5 years, depending on the selected catalog), the software will develop a unit price as described in the "General" section of these guidelines. Therefore, Estimator® is the generally preferred source of unit costs. However, Attachment 4 is provided as a quick source of 'ball park' unit price ranges. The ranges provided reflect expected range, as opposed to the absolute range (minimum

and maximum bids) for these items. It is not unusual for a bid to fall outside the ranges shown. Typically, unit prices decline as quantities increase. Factors such as site constraints, schedule and location also affect bid prices and should be considered in estimating unit costs. This information (i.e., Attachment 4) should never be used as the primary basis for developing final estimates.

For additional information on construction cost estimating for Department-administered projects, contact Mr. Robert Neville (594-3245) or Mr. Mark Stopper (594-3248) in the Cost Estimating section.

Attachments

1. Example Estimate
2. Chief Engineer Memorandum, January 10, 2014
3. Chief Engineer Memorandum, August 14, 2009
4. General Price Ranges of Common Items

PROJECT NO. 123-456

Phase of Development: **Preliminary Design**

TOTAL COST SUMMARY

ACTIVITY	ESTIMATED COST	STATE SHARE		COST TO STATE PROJECT	YEAR OF EXPENDITURE
PRELIMINARY DESIGN	110,000	100	%	110,000	2015
RIGHT OF WAY (PRE-ACQUISITION)	25,000	100	%	25,000	2015
UTILITIES (ENGINEERNIG)	21,000	100	%	21,000	2016
RAILROAD (ENGINEERING)	26,000	100	%	26,000	2016
FINAL DESIGN	325,000	100	%	325,000	2016
RIGHT OF WAY (ACQUISITION)	150,000	100	%	150,000	2016
CONSTRUCTION CONTRACT	4,846,548	100	%	4,846,548	2017
UTILITIES (CONSTRUCTION)	600,000	50	%	300,000	2017
RAILROAD (CONSTRUCTION)	125,000	100	%	125,000	2017
INCIDENTALS (CENG)	1,211,637	100	%	1,211,637	2017
STATE POLICE	187,000	100	%	187,000	2017

All costs include contingencies and inflation to year of expenditure

CONTRACT COST SUMMARY

Scheduled Bid Letting 3/15/2017 Inflation (%) 5
Estimate Date 1/2015
Construction duration 2 Years

ROADWAY (See breakout, separate sheet)			1,627,345
STRUCTURES (See breakout, separate sheet)			627,700
ENVIRONMENTAL COMPLIANCE (See breakout, separate sheet)			20,200
TRAFFIC (See breakout, separate sheet)			100,000
CLEARING & GRUBBING (as % of total contract items)	3	%	104,790
M & P OF TRAFFIC (as % of total contract items)	5	%	174,650
CONSTRUCTION STAKING (as % of total contract items)	2	%	69,860
MOBILIZATION (as % of total contract items)	7	%	244,511
MINOR ITEM ALLOWANCE (as % of total contract items)	15	%	523,951
Base Estimate			3,493,007
CONTRACT COST, INCLUDING CONTINGENCY (at designated %)	25	%	4,366,259
CONTRACT COST WITH CONTINGENCY & INFLATION			**$4,846,548**

ESTIMATED BY; Tom Smith

REVIEWED BY: John Brown

PROJECT NO. 123-456

STRUCTURE

ITEM		BASIS FOR ESTIMATE			COST	
NUMBER	DESCRIPTION	LENGTH	WIDTH	# OF UNITS	UNIT COST	COST
	REPLACE BRIDGE 1234 (Estimate SF)	42	28	1,176	400	470,400
	RETAINING WALL (Estimate SF)			1,430	110	157,300
STRUCTURE SUBTOTAL						627,700

TRAFFIC

ITEM		BASIS FOR ESTIMATE			COST	
NUMBER	DESCRIPTION	DAYS	HOURS/DAY	# OF UNITS	UNIT COST	COST
0970007	TRAFFIC PERSON (UNIFORMED FLAGGER)	175	8	1,400	50	70,000
1118051	TEMPORARY SIGNALIZATION (LS)			1	30,000	30,000
TRAFFIC SUBTOTAL						100,000

ENVIRONMENTAL COMPLIANCE

ITEM		BASIS FOR ESTIMATE			COST	
NUMBER	DESCRIPTION	UNITS		# OF UNITS	UNIT COST	COST
0101117	CONTROLLED MATERIALS HANDLING	CY		100	8	800
0101168	RSA/WSA EQUIPMENT OPERATOR	HOUR		120	70	8,400
0202315	DISPOSAL OF CONTROLLED MATERIALS	TON		200	55	11,000
ENVIRONMENTAL COMPLIANCE SUBTOTAL						20,200

Connecticut DOT
2014 Cost Estimating Guidelines
Attachment 1, Example Estimate

PROJECT NO. 123-456

ROADWAY

ITEM		BASIS FOR ESTIMATE		COST	
NUMBER	DESCRIPTION	UNITS	# OF UNITS	UNIT COST	COST
0202000	EARTH EXCAVATION	CY	5,089	18	91,602
0202200	CHANNEL EXCAVATION	CY	345	20	6,900
0202100	ROCK EXCAVATION	CY	312	65	20,280
0209001	FORMATION OF SUBGRADE	SY	8,976	3	26,928
0212000	SUBBASE	CY	2,620	35	91,700
0406171	HMA S0.5	TON	4,890	110	537,900
0811001	CONCRETE CURBING	LF	1,635	35	57,225
0601020	STAMPED CONCRETE (TRUCK APRON)	SF	3,430	40	137,200
0921019	TEXTURED CONCRETE MEDIAN	SF	4,305	18	77,490
0921001	CONCRETE SIDEWALK	SF	2,680	11	29,480
0910029	METAL BEAM RAIL (TYPE R-B 350)	LF	300	22	6,600
0914007	WOOD PLANK RAIL	LF	200	18	3,600
0922501	BITUMINOUS CONCRETE DRIVEWAY	SY	2,959	40	118,360
0944000	FURNISHING AND PLACING TOP SOIL	SY	7,221	8	57,768
0406267	MILLING OF HMA (0" TO 4")	SY	1,223	6	7,338
0202502	REMOVAL OF CONCRETE PAVEMENT	SY	2,934	11	32,274
	CATCH BASINS	EA	16	2,500	40,000
0651011	12" RCP	LF	520	50	26,000
0651012	15" RCP	LF	340	55	18,700
0651013	18" RCP	LF	420	60	25,200
0652011	18" RCCE	EA	2	1,300	2,600
0703011	INTERMEDIATE RIPRAP	CY	150	90	13,500
0969062	FIELD OFFICE, MEDIUM	MO	20	2,500	50,000
	LANDSCAPING	PROJECT	1	38,000	38,000
	BUILDING DEMO	PROJECT	1	11,500	
	ILLUMINATION	PROJECT	1	28,500	28,500
	WETLAND MITIGATION	PROJECT	1	137,000	82,200
ROADWAY SUBTOTAL					1,627,345

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
OFFICE OF CONSTRUCTION

memorandum

subject: Incidental Cost Estimates and Project Contingencies

date: January 10, 2014

to:
Mr. James H. Norman
Engineering Administrator

from:
Thomas A. Harley, P.E.
Chief Engineer
Bureau of Engineering and Construction

Following a review of incidental costs and final construction costs for various sizes and types of projects, it has been determined that the initial estimated amount for construction incidentals should be based upon a percentage of the estimated construction cost (contract items). The incidental percentages to be applied for the respective categories of projects shall be as follows:

Project Size/Type	*Incidental Percentage*
Less than $1 Million	40%
$1 Million to $5 Million	25%
$5 Million to $20 Million	20%
$20 Million to $50 Million	15%
> $50 Million	10%
Resurfacing, Safety Improvements	30%
Traffic, Incident Management	30%

The incidental percentages shown above should be used for budgeting purposes, as well as all PS&E's and project initiation documents. The Construction Districts will continue to prepare the incidental budget for the units involved in construction support. The incidental establishment memo will be produced after the low bid and consultant fees, if any, are known and will be incorporated into the project budget with the first Project Modification. The contingency amount for construction contracts should be uniformly set at 10 percent (10%) of the contract cost (contract items) at PS&E. Estimating guidance for contingencies during the planning and design phases is unaffected.

cc: Amy Jackson-Grove (FHWA)
Wally Lugli – Christian Davis – Carl Belina – Office of Financial Services
Thomas A. Harley
Scott Hill
Tim Wilson
James Fallon
Lewis S. Cannon – James P. Connery – Liaisons
Ravi V. Chandran – Dean P. Cerasoli – Lynn Cichowski – Frank Kaminski
Carl E. Nelson – Robert Obey – James Paul
Mark D. Rolfe – Domenic LaRosa – Brian Mercure – Rob Wiecki
Kenneth E. Fargnoli – John Dunham – John Lee
Robert Lauzon

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
OFFICE OF CONSTRUCTION

memorandum

subject: Calculations for Incidental Costs Associated with Muncipal Systems Projects

date: August 14, 2009

to: DISTRIBUTION

from: Thomas A. Harley, P.E.
Chief Engineer
Bureau of Engineering and Construction

Below is a proposed change to the calculations for Incidental Costs associated with Municipal Systems Projects. This revision is in response to clarification prompted by a memorandum from Mr. Mark Rolfe to Mr. James Norman regarding Incidental Costs on Department Projects.

After considerable review of historical data and in discussions with Office of Engineering staff and District Municipal Teams, it was determined to revisit the method of calculation for the initial Incidental Costs establishment.

Please see below:

Project Type	MS/AT	Lab	Town/City	Total	Contingency
Less than $1 Million	7%	3%	15%	25% + $7,000+/-^ for auditor reviews	10%
$1 Million to $5 Million	5%	2%*	14%	21%* + $7,000+/-^ for auditor reviews	10%
$5 Million to $10 Million	5%	2%*	8%	15%* + $7,000+/-^ for auditor reviews	10%
$10 Million to $20 Million	5%	2%*	5%	12%* + $7,000+/-^ for auditor reviews	7%
> $20 Million	Projects meeting this type will be reviewed with the District and Municipality on a case by case basis.				

*Bridge projects will increase to 3% for Lab Incidentals.

^ External Audits: $2,500 for State/Town Agreements, $3,000 for Town/CE Agreements, $1,500 for Office of Quality Assurance Audit

All projects advertised after August 31, 2009 will follow this new format.

Mary K. Baier/mkb/kab
cc: Comr. Marie – Dep. Comr. Martin – Dep. Comr. Parker
James H. Norman, Acting Engineering Administrator
Lewis S. Cannon – Liaisons
David C. Lavado – James E. Hamilton
Carl E. Nelson – ADE
Mark D. Rolfe – Jo Ann Devine
Daniel P. Foley – Kenneth E. Fargnoli
Ravi V. Chandran

Connecticut DOT

2015 Cost Estimating Guidelines

Attachment 4, General Price Ranges of Common Items

Item No.	Item Description	Units	Unit Price Range	
0101117	CONTROLLED MATERIALS HANDLING	c.y.	4.00	40.00
0104057	POLE FOUNDATIONS, TYPE A	ea.	675.00	850.00
0202000	EARTH EXCAVATION	c.y.	15.00	30.00
0202100	ROCK EXCAVATION	c.y.	60.00	150.00
0202315	DISPOSAL OF CONTROLLED MATERIALS	ton	35.00	70.00
0202502	REMOVAL OF CONCRETE PAVEMENT	s.y.	8.00	20.00
0202529	CUT BITUMINOUS CONCRETE PAVEMENT	l.f.	2.00	6.00
0203000	STRUCTURE EXCAVATION - EARTH (COMPLETE)	c.y.	20.00	40.00
0203100	STRUCTURE EXCAVATION - ROCK (COMPLETE)	c.y.	90.00	150.00
0204001	COFFERDAM AND DEWATERING	l.f.	200.00	400.00
0205003	TRENCH EXCAVATION 0'-10' DEEP	c.y.	10.00	30.00
0207000	BORROW	c.y.	10.00	30.00
0207150	LIGHTWEIGHT FILL	c.y.	50.00	90.00
0209001	FORMATION OF SUBGRADE	s.y.	2.00	4.00
0210100	ANTI-TRACKING PAD	s.y.	10.00	30.00
0212000	SUBBASE	c.y.	30.00	55.00
0213100	GRANULAR FILL	c.y.	45.00	65.00
0216000	PERVIOUS STRUCTURE BACKFILL	c.y.	35.00	60.00
0216009	EXPANDED POLYSTYRENE FILL	c.y.	85.00	125.00
0219001	SEDIMENTATION CONTROL SYSTEM	l.f.	4.00	10.00
0304002	PROCESSED AGGREGATE BASE	c.y.	35.00	60.00
0406158	PMA S0.375	ton	100.00	140.00
0406159	PMA S0.5	ton	85.00	105.00
0406170	HMA S1	ton	90.00	150.00
0406171	HMA S0.5	ton	100.00	175.00
0406172	HMA S0.375	ton	115.00	180.00
0406236	MATERIAL FOR TACK COAT	gal.	2.00	8.00
0406267	MILLING OF HMA (0" TO 4")	s.y.	3.00	15.00
0406285	FINE MILLING OF H.M.A. (0" - 4")	s.y.	2.50	15.00
0507001	TYPE "C" CATCH BASIN	ea.	2,000.00	3,800.00
0507201	TYPE "C-L" CATCH BASIN	ea.	2,500.00	4,000.00
0507771	RESET CATCH BASIN	ea.	700.00	1,100.00
0520036	ASPHALTIC PLUG EXPANSION JOINT SYSTEM	c.f.	225.00	380.00
0601000	CLASS "A" CONCRETE	c.y.	700.00	1,200.00
0601070	CLASS "S" CONCRETE	c.y.	8,000.00	12,000.00
0601201	CLASS "F" CONCRETE	c.y.	800.00	2,500.00
0601318	PARTIAL DEPTH PATCH	c.f.	200.00	350.00
0602000	DEFORMED STEEL BARS	lb.	1.40	2.20
0602006	DEFORMED STEEL BARS - EPOXY COATED	lb.	1.80	3.00
0651012	15" R.C. PIPE	l.f.	30.00	90.00
0651013	18" R.C. PIPE	l.f.	60.00	100.00
0651015	24" R.C. PIPE	l.f.	75.00	120.00
0651017	30" R.C. PIPE	l.f.	90.00	150.00

Connecticut DOT

2015 Cost Estimating Guidelines

Attachment 4, General Price Ranges of Common Items

Item No.	Item Description	Units	Unit Price Range	
0651051	12" R.C. PIPE CLASS V	l.f.	40.00	90.00
0651052	15" R.C. PIPE CLASS V	l.f.	50.00	100.00
0651053	18" R.C. PIPE CLASS V	l.f.	65.00	130.00
0702101	FURNISHING STEEL PILES	lb.	0.50	0.80
0702111	DRIVING STEEL PILES	l.f.	15.00	30.00
0707001	MEMBRANE WATERPROOFING (WOVEN GLASS FABRIC)	s.y.	35.00	60.00
0714050	TEMPORARY EARTH RETAINING SYSTEM	s.f.	15.00	80.00
0751711	6" UNDERDRAIN	l.f.	20.00	40.00
0751821	6" STRUCTURE UNDERDRAIN	l.f.	10.00	35.00
0811001	CONCRETE CURBING	l.f.	30.00	60.00
0813031	6" GRANITE STONE CURBING	l.f.	40.00	50.00
0815001	BITUMINOUS CONCRETE LIP CURBING	l.f.	6.00	12.00
0822001	TEMPORARY PRECAST CONCRETE BARRIER CURB	l.f.	20.00	50.00
0822002	RELOCATED TEMPORARY PRECAST CONCRETE BARRIER	l.f.	4.00	15.00
0910170	METAL BEAM RAIL (TYPE R-B 350)	l.f.	20.00	40.00
0910173	R-B 350 BRIDGE ATTACHMENT - VERTICAL SHAPE	ea.	2,500.00	3,000.00
0910174	R-B 350 BRIDGE ATTACHMENT - JERSEY SHAPE	ea.	2,400.00	3,400.00
0911924	R-B END ANCHORAGE-TYPE II	ea.	1,200.00	1,500.00
0912503	REMOVE METAL BEAM RAIL	l.f.	4.00	10.00
0921001	CONCRETE SIDEWALK	s.f.	9.00	18.00
0922500	BITUMINOUS CONCRETE DRIVEWAY (COMMERCIAL)	s.y.	35.00	50.00
0922501	BITUMINOUS CONCRETE DRIVEWAY	s.y.	35.00	50.00
0939001	SWEEPING FOR DUST CONTROL	hr.	90.00	150.00
0944000	FURNISHING AND PLACING TOPSOIL	s.y.	6.00	12.00
0949000	WOOD CHIP MULCH	s.y	4.00	10.00
0950005	TURF ESTABLISHMENT	s.y	1.00	3.00
0969060	CONSTRUCTION FIELD OFFICE, SMALL	month	2,000.00	3,000.00
0969062	CONSTRUCTION FIELD OFFICE, MEDIUM	month	2,000.00	3,600.00
0969064	CONSTRUCTION FIELD OFFICE, LARGE	month	3,000.00	5,000.00
0970007	TRAFFICPERSON (UNIFORMED FLAGGER)	hr.	45.00	55.00
0974001	REMOVAL OF EXISTING MASONRY	c.y.	100.00	300.00
0978002	TRAFFIC DRUM	ea.	50.00	100.00
1001001	TRENCHING AND BACKFILLING	l.f.	15.00	30.00
1008115	2" RIGID METAL CONDUIT IN TRENCH	l.f.	9.00	14.00
1111451	LOOP DETECTOR SAW CUT	l.f.	10.00	15.00
1131002	REMOTE CONTROL CHANGEABLE MESSAGE SIGN	day	35.00	50.00
1806200	FURNISHING AND USE OF PORTABLE IMPACT ATTENUATION	hr.	50.00	100.00